What is claimed is:

1. A process for amplifying a nucleic acid of a target cell or virus, which process comprises:

a) contacting a sample containing or suspected of containing a target cell or virus with a magnetic microbead;

b) allowing said target cell or virus, if present in said sample, to bind to said magnetic microbead to form a conjugate between said target cell or virus and said magnetic microbead; and

c) separating said conjugate from other undesirable constituents via a magnetic force to isolate said target cell or virus from said sample; and

d) applying said separated conjugate to a nucleic acid amplification system to amplify a nucleic acid from said target cell or virus.

2. The process of claim 1, wherein the sample is a clinical sample.

3. The process of claim 1, wherein the sample is selected from the group consisting of serum, plasma, whole blood, sputum, cerebral spinal fluid, amniotic fluid, urine, gastrointestinal contents, hair, saliva, sweat, gum scrapings, marrow, tissue and cell culture.

4. The process of claim 1, wherein the target cell is selected from the group consisting of an animal cell, a plant cell, a fungus cell, a bacterium cell, a recombinant cell and a cultured cell.

5. The process of claim 1, wherein the target virus is an eucaryotic cell virus or a bacteriophage.

6. The process of claim 1, wherein the magnetic microbead comprises a magnetizable substance selected from the group consisting of a paramagnetic substance, a ferromagnetic substance and a ferrimagentic substance.

7. The process of claim 6, wherein the magnetizable substance comprises a metal composition.

8. The process of claim 7, wherein the metal composition is a transition metal composition or an alloy thereof.

9. The process of claim 8, wherein the transition metal is selected from the group consisting of iron, nickel, copper, cobalt, manganese, tantalum, zirconium and cobalt-tantalum-zirconium (CoTaZr) alloy.

10. The process of claim 7, wherein the metal composition is Fe_3O_4.

11. The process of claim 1, wherein the magnetic microbead has a diameter ranging from about 5 to about 50,000 nanometers.

12. The process of claim 1, wherein the magnetic microbead is untreated or modified with an organic molecule.

13. The process of claim 1, wherein the magnetic microbead is modified to comprise a hydroxyl, a carboxyl or an epoxy group.

14. The process of claim 1, wherein the magnetic microbead is modified to comprise a moiety that specifically binds to the target cell or virus.

15. The process of claim 14, wherein the moiety is an antibody or functional fragment thereof.

16. The process of claim 1, wherein the target cell or virus, if present in the sample, is allowed to bind to the magnetic microbead nonspecifically or with low specificity to form the conjugate.

17. The process of claim 1, wherein the target cell or virus, if present in the sample, is allowed to bind to the magnetic microbead with high specificity to form the conjugate.

18. The process of claim 1, which further comprises washing the separated conjugate to remove the undesirable constituents before applying separated conjugate to a nucleic acid amplification system.

19. The process of claim 1, which is automated.

20. The process of claim 1, which is completed within a time ranging from about 0.5 minute to about 30 minutes.

21. The process of claim 1, which is conducted in an eppendorf tube.

22. The process of claim 1, which is conducted in the absence of a precipitation or centrifugation procedure.

23. The process of claim 1, which is conducted in the absence of a poisonous agent.

24. The process of claim 1, which is conducted at an ambient temperature ranging from about 0°C to about 35°C without temperature control.

25. The process of claim 1, wherein the sample volume ranges from about 5 μl to about 50 μl.

26. The process of claim 1, wherein the target cell is a leukocyte isolated from whole blood, marrow or lympha.

27. The process of claim 1, wherein the target cell is an epithelia cast-off cell or a bacteria cell isolated from saliva, urine and tissue culture.

28. The process of claim 1, wherein the nucleic acid amplification system is selected from the group consisting of polymerase chain reaction (PCR), ligase chain reaction (LCR), nucleic acid sequence-based amplification (NASBA), strand displacement amplification (SDA) and transcription-medicated amplification (TMA).

29. The process of claim 1, which further comprises removing cells from a sample containing or suspected of containing a target virus or bacteriophage before contacting the sample with a magnetic microbead.

30. A kit for amplifying a nucleic acid of a target cell or virus, which kit comprises in a same or different container(s):

a) a magnetic microbead for contacting a sample containing or suspected of containing a target cell or virus;

b) means for allowing said target cell or virus, if present in said sample, to bind to said magnetic microbead to form a conjugate between said target cell or virus and said magnetic microbead;

c) means for separating said conjugate from other undesirable constituents via a magnetic force from said sample; and

d) a nucleic acid amplification system to amplify a nucleic acid from said target cell or virus.

31. The kit of claim 30, which further comprises an instruction for using the kit for amplifying a nucleic acid of a target cell or virus from a sample.

32. A process for amplifying a nucleic acid of a target cell or virus, which process comprises:

a) contacting a sample containing or suspected of containing a target cell or virus with a magnetic microbead;

b) allowing said target cell or virus, if present in said sample, to bind to said magnetic microbead to form a conjugate between said target cell or virus and said magnetic microbead; and

c) separating said conjugate from other undesirable constituents via a magnetic force to isolate said target cell or virus from said sample;

d) releasing a nucleic acid from said cell-microbead or virus-microbead conjugate to form a nucleic acid-microbead conjugate; and

d) applying said nucleic acid-microbead conjugate to a nucleic acid amplification system to amplify said nucleic acid from said target cell or virus.

33. The process of claim 32, which further comprises washing the nucleic acid-microbead conjugate to remove the undesirable constituents before applying the nucleic acid-microbead conjugate to a nucleic acid amplification system.

34. The process of claim 32, which further comprises separating nucleic acid-microbead conjugate from other undesirable constituents via a magnetic force before applying the nucleic acid-microbead conjugate to a nucleic acid amplification system.

35. A kit for amplifying a nucleic acid of a target cell or virus, which kit comprises in a same or different container(s):

a) a magnetic microbead for contacting a sample containing or suspected of containing a target cell or virus;

b) means for allowing said target cell or virus, if present in said sample, to bind to said magnetic microbead to form a conjugate between said target cell or virus and said magnetic microbead;

c) means for separating said conjugate from other undesirable constituents via a magnetic force from said sample;

d) means for releasing a nucleic acid from said cell-microbead or virus-microbead conjugate to form a nucleic acid-microbead conjugate; and

e) a nucleic acid amplification system to amplify a nucleic acid from said target cell or virus.

36. The kit of claim 35, which further comprises an instruction for using the kit for amplifying a nucleic acid of a target cell or virus from a sample.